OF MICE AND CHILDREN

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INTRODUCTION.

The purpose of the study was to explore elementary school children's preferences for computer mice of different shapes and sizes. A user-centered approach was employed to elicit children's input about alternative designs. The intent was to indentify shapes that constitute a better ergonomic fit for children's smaller hands and to establish whether different shapes are suitable for different age groups.

METHOD

The eighty seven children (43 boys and 44 girls) who participated, attend Henderson elementary, a laboratory school affiliated with Florida Atlantic University. The children were from kindergarten (20 children, average age 6), first grade (25 children, average age 7), fourth grade (21 children, average age 10), and eighth grade (21 children, average age 13). Four resin-plastic prototypes of computer mice were used: a round mouse, a small "finger" mouse and two models of commercially available mice (CM1 and CM2). The four mice were randomly arranged on the table (Latin square method). The children's task was to try each mouse (move it on the table, lift it, press buttons), and then report which one felt "most comfortable" to use. The four mice were rank-ordered according to each child's preferences.

RESULTS

The data were analyzed in two ways. The percentage of first choices was computed, that is how many times a particular mouse was selected by a group of children as their first choice (table 1). The rankings of the four mice (rank 1 = first choice, rank 4 = last choice) were also analyzed for statistical significance (Bradley, 1976; for a discussion on the use of a rank-based method for evaluating the usability of competitive products, see Lewis, 1991).

The results indicate that a statistically significant number of kindergarten children ($X^2 = 8.8$, a=.05, df=3) identified the finger mouse as their first choice. First, fourth and eighth grade students had the commercial mouse 2 (CM2) as a first choice (a=.10).

The rank-based analyses indicate that the CM2 was ranked best by the majority of first, fourth and eighth grade children. For the kindergarten group the ranking of the mice did not establish a clear preference.

DISCUSSION

Overall, the results did not support the hypothesis that children would prefer a smaller mouse. Comments made by children indicate that they prefer a wide, ergonomically shaped mouse that can provide support for the whole hand. ("My whole hand can rest on it"). The finger mouse was preferred by the youngest children. It provided a good ergonomic fit to their smaller hands. The round mouse was also a popular choice for the kindergarten children (30% first choice). Their hands, still "chubby", with wide palms and short fingers, fitted comfortably on the round mouse that acted as an overall hand mouse.

This user-centered approach proved very useful in eliciting children's input about alternative designs of computer mice. Further research with fully functional prototypes of the models is planned.

REFERENCES

Bradley, J. V. (1976). *Probability; Decisions; Statistics.* Englewood Cliffs, N.J.: Prentice Hall.

Lewis, J. R. (1991). *A Rank-Based Method for the Usability Comparison of Competing Products.* Proceedings of the Human Factors Society 35th Annual Meeting, September 2-6, San Francisco, California.

Table 1: Children and the Percentage of First Choices

	Round	CM1	CM2	Finger
Kindergarten	(6/20) 30%	(2/20) 10%	(2/20) 10%	(10/20) 50% **
1st Grade	(2/25) 8%	(5/25) 20%	(11/25) 44% *	(7/25) 28%
4th Grade	(4/21) 19%	(0/21) 0%	(11/21) 52% *	(6/21) 29%
8th Grade	(4/21) 19%	(2/21) 9%	(10/21) 48% *	(5/21) 24%
Total	(16/87) 18%	(9/87) 10%	(34/87) 39%	(28/87) 32%

** a = .05 * a = .10